CLAIMS

1. A method for determining the value to be given to a set of specific parameters of a system based on the values of a set of measurement parameters of this system, where each of the parameters can take a finite number of values, the system being associated with a means for providing a probability value for any combination of values of the specific parameters, said probability value being all the greater as the selection of the considered combination is pertinent knowing the value of the measurement parameters, the method comprising the steps of:

- noting down the value of each measurement parameter;
- constructing a tree-shaped representation of the probability distribution of all the possible combinations of values of the specific parameters corresponding to the noted down values,

the set of combinations, forming a first branch, being divided into several subsets of combinations, forming second branches, each subset gathering combinations having close specific parameter values, where each second branch can similarly divide into several third branches and so on,

a probability value being assigned to each branch, this probability value being that obtained for one of the combinations of the considered branch or for one of the combinations of one of the branches from which the considered branch originates;

- selecting according to a predefined selection criterion one of the combinations of values of the specific parameters based on the representation of the previously-constructed tree-shaped probability distribution.

2. The method of claim 1, wherein the branches resulting from the division of a same branch are at the number of two and contain the same number of combinations, the first branch dividing in two second branches, where each second branch can divide in two third branches and so on.

3. The method of claim 2, wherein the division of a branch in two branches comprises the steps of:

a) selecting a combination different from the combinations having already been used to define the probability value of the existing branches and calculating the probability of this selected combination;

b) dividing the so-called "parent" branch containing the selected combination in two so-called "child" combinations; and

in the case where the selected combination and the "parent" combination used to define the probability value of the parent branch belong to the same child branch, assigning to the two child branches the probability value of the parent branch and dividing the child branch containing the selected combination by resuming the method at step b), this child branch becoming the parent branch, and

in the case where the selected combination and the parent combination do not belong to the same child branch, assigning the probability value of the selected combination to the child branch containing the selected combination and assigning the probability value of the parent combination to the other child branch.

4. The method of claim 1, wherein the selection criterion consists of selecting one of the combinations exhibiting the maximum probability.

5. The method of claim 2, wherein the selection of a combination consists of implementing the recursive method comprising the steps of:

a) randomly selecting a number p ranging between 0 and 1;

b) calculating the sum of the probability values assigned to the two so-called child branches resulting from the division of the first branch, and calculating for each child branch a new probability value equal to the ratio between the

probability value assigned to this child branch and the calculated sum;

c) defining two contiguous probability intervals between 0 and 1, the first interval being associated with a first child branch, the second interval being associated with the second child branch, the first interval ranging from 0 to and including the probability value of the first child branch and the second interval ranging from the probability value to 1;

d) identifying in which interval number is to be found and selecting the child branch associated with this interval, and

in the case where the selected child branch ramifies into other branches, resuming the recursive method at step a), the first branch being replaced with the selected child branch, otherwise

e) selecting one of the combinations of the selected child branch.

6. The method of claim 1, wherein the selection criterion consists of selecting one of the combinations having a probability value which is predetermined or ranging between two given probability values.

7. The method of claim 1, wherein the probability values assigned to each branch are not normalized and can be greater than one.

8. The method of claim 7, wherein a weighting is assigned to each branch, the weighting of the branches of the last ramifications being equal to the product of the probability value assigned to this branch and of the number of combinations of this branch, the weighting of the other branches being equal to the sum of the weightings of the branches originating from the considered branch and being on the next ramification level.

9. The method of claim 8, wherein the probability value assigned to each branch can be normalized, the normalized probability value of a branch being obtained by dividing the

probability value of this branch by the weighting assigned to the first branch of the tree.

10. The method of claim 3, wherein the selection of a combination is performed by implementing a method generating combinations having high probability values.

11. The method of claim 1, wherein the representation of the probability distribution of all the combinations is memorized and may be subsequently refined by the creation of additional branches, or may be simplified by the suppression of certain branches.

12. The method of claim 1, wherein the number of values likely to be taken by a parameter is artificially increased, the probability value of a combination of values of control parameters, among which at least a value of one of the parameters corresponds to an added value, is zero.